



**BUREAU
VERITAS**



PRD N° 009B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

WELDING PROCEDURE QUALIFICATION RECORD

N° QP-ITA-23-00978 Rev.0

LEVEL

2

Manufacturer's WPQR no 06-2023

Manufacturer B.M.S. s.r.l. Building And Mechanical Solution SpA

Address Zona Industriale Macchiareddu 9° Strada 09010 Uta (CA)
Italy

Date of welding 30 May 2023

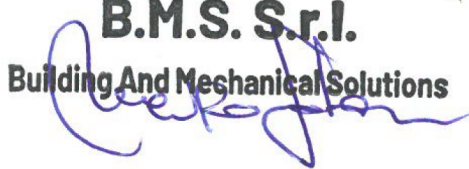
Reference standard UNI EN ISO 15614-1 Ed. 2019

Code/ Standard Supplem./Client Req PED 2014/68/EU

Certificate issued by / Authorized Inspector Mr. Giancarlo Erbi

BUREAU VERITAS ITALIA SpA

Certifies that test pieces were prepared, welded and tested satisfactorily in accordance with the requirements of the documents indicated above.
Permanent Joining Procedure Qualification Record respect the Essential Safety Requirements stated by PED Directive Appendix I- § 3.1.2. Test performed are equivalent to harmonized standard published in the Official journal of the European Union

EXAMINATION BODY	MANUFACTURER
Name, date and signature of authorized representant Mr. Giancarlo Erbi 17 Oct 2023 Stamp  	Name, date and signature of representant B.M.S. S.r.l. Building And Mechanical Solutions 

Revision No:

Reason of revision :

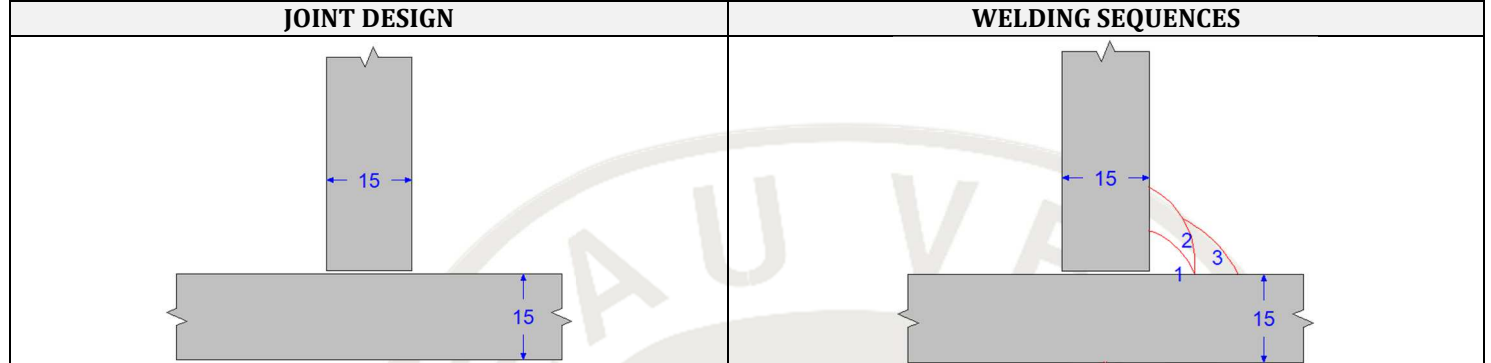
Other identification (if necessary)

: 23.SF.5436792.783 - R53442/23/GE/ge

Organization Name	B.M.S. s.r.l.			pWPS No.	06-2023		
Mfr Procedure Qualification Record No.				Date	30.05.2023		
Welders and/or welding operators :	Puddu Simone 7 (Pos. PB)						
Welding Process(es)	A)	136	B)		C)		
Types (Manual, Autom., Partly Mechanized)	A)	Partial Mechanised	B)		C)		

WELDING PERFORMED WITNESSED BY :

PREPARATION				PARENT MATERIAL			
Joint type	FILLET JOINT			Parent material grade	A.240 Tp304L		A.240 Tp304L
Backing (only for BW)	Yes ☐	No ☒		Material Standard	ASTM		ASTM
Permanent backing Group	N.A.			Group / Subgroup	8.1		8.1
Gouging or grinding	N.A.			Thickness (mm)	15		15
Preparation and cleaning	Machining tool & brushing and degreasing			Outside diameter (mm)			



Note	WELDING POSITION: PB (EN ISO 6947)				Note		
Bevels	Angle	//	Root gap	//	Root face	//	
Buttering information (if performed)				Tack weld	136		

FILLER METALS				HEAT		
	A)		B)	Preheat temperature	≥ 20	° C
Filler Metal trade make	LASTEK – LASTFIL 803		N.A.	Interpass temperature	≤ 150	° C
Filler Metal standard	EN ISO 14343-A: 19 9 LSi AWS A5.9:ER308LSi		N.A.	Postheat temp and time	N.A.	° C
Filler Metal designation	N.A.		N.A.			
F-No. (Only for level 1)	N.A.		N.A.	POST WELD HEAT TREATMENT		
A-No. (Only for level 1)	N.A.		N.A.	Holding temp.	N.A.	° C
Flux trade make	N.A.		N.A.	Holding time	N.A.	min.
Flux designation	N.A.		N.A.	Heating rate	N.A.	°C/h
Weld Metal deposit	N.A.		N.A.	Cooling rate	N.A.	°C/h
Flux batch (recrushed slag)	N.A.		N.A.	Other info	N.A.	
Tungsten electr. (type & Ø)	N.A.		N.A.			
Other			N.A.			

GAS				TECHNIQUE		
	A)		B)	Weaving (max width of run)		
Shielding gas type %	Ar 80% - CO ₂ 20%		N.A.	Oscillation amplitude	N.A.	
Designation (EN ISO 14175)	M21		N.A.	Oscillat. frequ. - dwell time	N.A.	
flow rate l/min	10÷14		N.A.	Single or Multiple Electr.	Single	
Backing gas type %	N.A.		N.A.	Pulse welding details	N.A.	
Designation (EN ISO 14175)	N.A.		N.A.	Dist. cont. tube/work piece	10 ÷ 20	
flow rate l/min	N.A.		N.A.	Plasma welding details	N.A.	
Plasma gas type %	N.A.		N.A.	Torch angle °	N.A.	
Designation (EN ISO 14175)	N.A.		N.A.	Other		
flow rate l/min	N.A.		N.A.			

Run	Proc	Transfert Mode	Position	Filler metal (mm)	Current (A)		Voltage (V)		Curr. Type and polar	Thermal efficien. K	Wire speed (mm/s)	Welding speed (mm/s)	Heat input (J/mm)		Energy or power x arc time (J)	Weld bead lenght (mm)	Arc Energy * only for Wave form controlled (J/mm)
1	135	WELDING	PB	1,2	260	270	28	30	DC EN	N.A.	5÷6	5,583	1,043 ÷	1,161	N.A.	N.A.	N.A.
2÷3	135	WELDING	PB	1,2	260	270	28	30	DC EN	N.A.	5÷6	5,250	1,109 ÷	1,234	N.A.	N.A.	N.A.

NON DESTRUCTIVE TEST			
	Carried out by	Result	Report No
Visual test	BUREAU VERITAS	Satisfactory	R53073_cp_23.SF.5436792.783 - WPQR 6
Penetrant test	Aru Manuel		PT_WPQR_6
Magnetoscopic test	N.A.		
Radiographic test	N.A.		
Ultrasonic test	N.A.		
Other test	N.A.		

Report No

Test No	Direction	Position	Dimensions (mm)		Temp. °C	Rm (MPa)	Rp* (MPa)	A * (%)	Z * (%)	Fracture location	Results and remarks
			Thicknesses	Width Diam.		Required	Required Info	Required Info	Required Info		
Note											

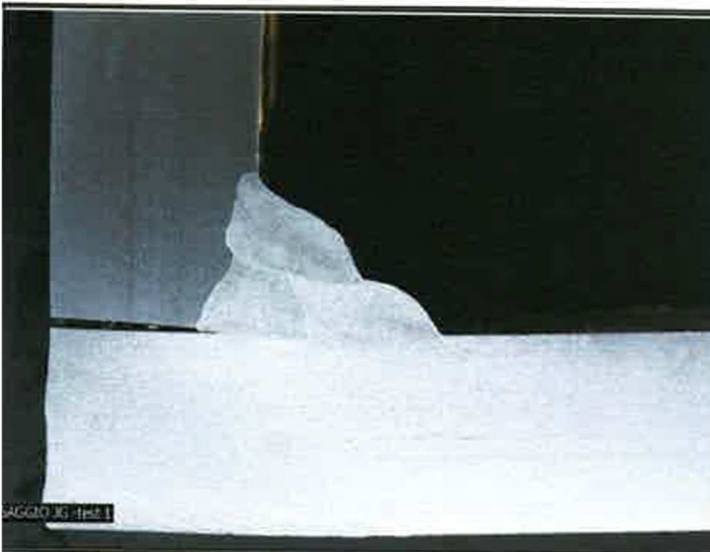
Report No

Test No	Direction	Specimen type			Dimensions (mm)		Former diameter	Angle	Results and remarks
	Transv-Long	Face	Root	Side	Thickness	Width	(mm)	°	
Note									

Report No

[illegible]

Report No. AQC No. 23/415 F Pag.1 del 26.07.2023



Note	<i>Absence of cracks, cavities, inclusions, lack of fusion/penetration</i> <i>Throat Thickness : 8,3 mm</i> <i>Result: Satisfactory</i>
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HARDNESS TEST In accordance with UNI EN ISO 9015-1:2011						Report No																
				Hardness type	HV10 – Position																	
				Point	B.M. 1				H.A.Z.				W.M.			H.A.Z.			B.M. 2			
				Line 1																		
				Line 2																		
Note		Maximum measured value : 202 HV10																				

OTHER TESTS	Report No

CERTIFICATE ATTACHMENT	
1. Range of qualification (Level 2)	2. pWPS WPQR 6
3. Filler metal certificate LASTEK no. CE803-75034 Batch No. 75034	4. Base metal certificate FERLAT ACCIAI no. CE23033767 Heat no. 321059
5. Visual Welding report: Bureau Veritas No. R53073_cp_23.SF.5436792.783 – WPQR 6 at 30.05.2023	6. Penetrant test report: Aru Manuel PT_WPQR_6 del at 31.05.2023
7. Laboratory test report: AQC 23/415 F at 26.07.2023	

NOTE - OBSERVATION

General for all process

Welding process(es)	136							
Degree of mechanization	Partly Mechanised							
Type of joint and weld	FW: P&T							
Parent material group(s) and sub group(s) included permanent backing material	Group 1.2 Test piece materials in groups 1 and 11 qualify the equal or lower specified minimum yield strength steels							
Parent Material Thickness (mm) without impact	BW		to		with		to	
Parent Material Thickness (mm) with impact	BW		to		with		to	
Parent Material Thickness (mm)	FW	≥ 5	To		with		to	
Parent Material Thickness (mm)	Branch		To		With		to	
Deposited weld Metal Thk (mm) each process :	N.A.							
Throat Thickness (mm) :	no restriction							
Outside Pipe Diameter (mm) :	outside diameter is >500 mm or when the outside diameter is >150 mm welded in the PC, in PF rotated position or in PA rotated position.							
Single run / Multi run :	Multi run							
Angle of branch connection	N.A.							
Filler Material	Equivalent mechanical properties, same type of covering core or flux, same nominal composition and the same or lower hydrogen content							
Filler Material Size	No restriction if heat input is respected. No limitation if hardness not required							
Type of Welding Current	136 Direct Current (DC EP)							
Heat Input (ISO/TR 18491)	Same used in procedure test		- 25 % when hardness requirements apply					
Welding Positions :	All positions, except for PG / PJ and J-L045							
Preheat Temperature :	> 20°C							
Interpass Temperature :	< 250°C							
Post-Heating for hydrogen release :	The temperature and duration of post-heating for hydrogen release shall not be reduced. Post-heating shall not be omitted, but may be added.							
Post-Weld Heat Treatment	Yes	☐	No	☒	Addition or deletion not permitted			
Post-Weld Heat Treatment temp.	N.A.							
Other informations								

Process 12

Number of electrodes	N.A.							
Flux make and designation (if impact required at < -20°C)	N.A.							
Flux re-crushed slag if used	N.A.							

Processes 111

FM trade name: (if impact required at < -20°C)	N.A.							
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Processes 114

FM trade name : (if impact required at < -20°C)	N.A.							
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Processes 13

Shielding Gas:	ISO 14175:2008 - M21							
Content of CO2	20% ± 0,36%							
Wire system (Single or multiple)	Single							
Mode of Metal Transfer :	SPRAY ARC							
Power source	☐ Waveform controlled ☐ Pulsed mode (without waveform controlled) ☒ Without pulsed and waveform							
136 and 132 Filler Material trade name: (impact required at < -20°C)	Same							

Process 14

Shielding Gas:	N.A.							
Content of He	N.A.							
Filler metal used	N.A.							

Process 15

Plasma gas composition	N.A.							
Shielding gas composition	N.A.							
Filler metal used	N.A.							
Joint preparation (if impact test required)	N.A.							

Process 311

Filler metal used	N.A.							
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Backing Gas

Backing gas	N.A.							
Backing gas main group (ISO 14175)	N.A.							
Change backing gas (material groups 7 and 10)	N.A.							
Deletion if production are made with mb > 5 mm	N.A.							